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THE PSYCHOLOGY OF TICKLING, LAUGHING, AND THE COMIC.

BY G. STANLEY HALL AND ARTHUR ALLIN.

In February, 1896, the authors of this paper issued a syllabus (No. 10 in the series for that year), entitled, *Tickling, Fun, Wit, Humor, Laughing*. This was widely circulated, and brought returns up to the date of writing from, in all, about 700 persons, reporting sometimes on themselves and often collectively from many others, so that nearly 3,000 people and perhaps 4,000 items are represented in the following report. The method of gathering and collating these data was very similar to that described in a report on fears.¹ All received up to July, 1896, were carefully and fully analyzed by one of us (A. A.), who collected most of the literary references, drew a number of the most important conclusions, and turned over a preliminary paper to the other author (G. S. H.), who here undertakes to incorporate other returns, add other conclusions, rewrite and give final shape to the article. As for so many other of our syllabi, many of the best returns have been obtained by Miss Lillie A. Williams of the Trenton, N. J., Normal School. The questionnaire is as follows:

1. Just how would you tickle a child, physically, *i. e.*, a baby, as touching its cheeks, chin chopping, etc.; a child from three to six, as by animal noises, actions; a child at adolescence? Enumerate all the ways of tickling by physical contact or by actions and noises without words. Which would be surest to cause laughter, making faces? Are you, or are children, more ticklish at some

¹ AMERICAN JOURNAL OF PSYCHOLOGY, Vol. VIII, No. 2.

times than at others? What parts of your body are most ticklish, and at what motions, pointings, etc.?

2. Describe individual cases of giggling, simpering, smiling, tit-tering, grinning, convulsive and hysterical laughter. Describe individual peculiarities, as in smiling, one-sidedness, or simpering, excessive display of teeth, open or shut mouth, position of head and eyes, and attitude or vocal aspect of a laugh. What kind of noises do different people make in laughing? As the laugh spreads over the face, what features are first and what last involved? The same of the body to the point of falling down in convulsive laughter. Describe feelings, symptoms and after-effects upon self or others. Did you ever hear of one dying of laughter, or can you refer to any literary descriptions of laughter? Can and should we try to train ourselves or children to make prettier faces and noises when they laugh, or leave all to nature? Do they clap their hands and jump for joy? Do they laugh at smells and tastes?

3. Recall a few cases of great laughter in children and describe its cause, stories, jokes, funny mishaps, buffooneries, mimicry. What traits and acts do children laugh at in others? Give as good a list of school-room comicalities, as caricature on slates and blackboard, things pinned on garments, acts, habits, garments, etc., thought "perfectly ridiculous." What pictures in a magic lantern show excite most merriment among children? What parts of what pieces read? What have children found very droll, to your surprise, or that did not seem funny to you, and conversely, what do children do that makes you laugh without their intending it? List as many correct instances here as you can, always stating age and sex. Have you noticed any difference between children and adults or between older and younger children in this respect?

4. What have you ever seen or heard of that seemed as if any animals laughed? Have you seen them grin when you thought it was a laugh? Does a dog smile with its tail? Do hens, geese, horses, monkeys, calves make any noise that can be interpreted as a laugh? *e. g.*, when frisking or gamboling in the pasture for the first time in the spring. Describe also their antics and contortions which seem pure play and fun for them. Do birds cluck or make other noise from pure joy? What do you think about the whole matter of animal fun, humor, laughter, wit, jokes?

5. Recall a few cases where you have laughed hardest, and tell what caused it; also a few cases of unusually hearty laughter in others, and in audiences in theatres, and minstrel shows. Is there anything you can never recall without laughing? Also the most comic thing you ever heard of.

6. Kindly consider carefully and write the best you ever heard of each of the following: (a) pun, (b) repartee, (c) practical joke, as hazing, imitations, or horse play of any sort, (d) the funniest dinner or club story, or social anecdote, (e) the drollest, queerest, oddest story, (f) describe the funniest character you ever saw or ever read of.

7. What do you like best or dislike most in: (a) burlesque, (b) caricatures, (d) satire, (e) droll or silly "carryings on," (f) quaint or humorous, naïve, eccentric traits, etc., and whether in persons, or literature or on the stage? Which of these do you like best and least, and why? Describe your feelings at futile efforts to be funny or to make you laugh. Is it true that satire and wit are declining and a sense of humor increasing?

8. Describe any case of purely spontaneous laughing, in self or others, when simple self-complacency or a merry disposition, or joy at living was the only cause. What is banter or the milder

pleasantries of mind? Wherein does the wit (if any) consist in banter, derision, mockery, ridicule, rallying?

9. What peculiarities have you noticed in the wit and humor or stories or laughter of old people? Describe carefully any similarity you may notice between youth and old age in the matter of wit and humor.

10. Describe cases of laughter and joy at calamity of others; children laughing at ugly or deformed people. Is mirth growing more or less bitter?

11. Miscellaneous. Have you anything, or do you know of any helpful literature on this subject? Why do the insane laugh? Traits of wit and humor among different nationalities? Pleasure in painful acts, as picking sores, and probable cause of it?

I. *Physical Act of Laughing.* This has been described in great detail in our returns. Of few acts in childhood are mothers better observers than of the way in which their children laugh, how each feature is affected, and in what order. Returns upon this theme are far richer in detail than those upon crying, because the latter distracts the attention to the cause and its possible removal. Very striking is the immense individual variation in intensity, point of onset, expression of each feature, gesture, reaction, noises made, etc.

Many describe the *preliminary subjective symptoms* of a laugh commonly in such phrases as "I felt bubbling over," "ticklish sensation in stomach," "swelled up," "must laugh or burst," "immense strain to hold in," "funny feeling coming up from the stomach," "a store of energy I must expend," "I must laugh, I'm compelled, forced to do it to relieve a strain," "a creepy feeling inside spreading over the whole body," "am excited and know something must happen," "feel full of something to the point of bursting," "miserable if no outlet," "a quiver, thrill, or creepy feeling passing up from the stomach to the mouth," "eyes and cheeks protrude and can contain myself no longer, but feel empty later," "feel strong before, weak afterward."

The beginning and progress of the laugh are described in a large body of returns as observed both in others and in self. Typical cases are as follows: *Male*, 16. Lips first curl, then eyes shine, face changes and grows very handsome, then body sways, head is thrown back, mouth is wide open, rocks and emits ha, ha, for several minutes, till he is fatigued and slowly sobers up with a deep sigh. *Female*, 19. First squints her eyes until they are almost closed, then draws up the corners of her mouth in a twitching, shows a large surface of teeth and gums, then opens mouth, muscles of the neck jerk, head falls forward, shoulders shake, she doubles up convulsively, sometimes falls on the floor and ends with sobs and crying. *F.*, 11. Begins to laugh with twitching of the nos-

trils, then of the corners of the mouth, eyes open wide, mouth shut, and cachinnates through the nose, rocks from side to side, claps her hands together, often drops on floor, gets red in the face, shrieks and shows hysterical symptoms. *F.*, 19. Ears move first and mouth last, eyes glisten, shoulders shake, head is thrown back, body forward, and the movement of the diaphragm is excessive, and often becomes uncontrollable. *F.*, 16. Begins by opening mouth and eyes wide, head is tossed back and to the right, cheeks dimple, shoulders shake, and the noise is very soft. *M.*, 30. First sign is rapid winking, teeth are shut tight, lips drawn well away from them, shoulders shake, but there is no noise.

In our returns laughter began in 71 cases with the eyes, and in 51 cases with the mouth. The eyes are said to grow bright, glitter, sparkle (involving a tension of all the muscles of the bulbus), to twinkle (rapid lid movements), to dance (irregular or oscillatory movements of the recti), the mouth stretches, corners are drawn upward or sometimes downward, very often twitch or quiver. The mouth commonly opens, except in the simper, when it is nearly or quite closed. The lips are said to curl. In a few cases the laugh begins with dimples in the cheeks, and in others the muscles just below the ear move. In still other cases the first symptom is the throwing back of the head, and in others a snort or chuckle. Of the body movements about two-thirds assert that the shoulders, and one-third that the diaphragm, first move. As the cheeks are drawn upward and backward, the teeth show and the eyes grow small. In exceptional cases there is almost no feature, limb or movement that may not be the first symptom or aura of a laugh. It is sometimes the eyelid, sometimes the lower lip, upper lip, the toss of the head, tensing of the eye muscles, opening, or sometimes the closing of the teeth, swaying of the body, movement of the shoulders, hips, etc. Subjectively, too, the "funny feeling" may begin in the stomach, throat, head, diaphragm, face, etc. In some cases many of the noises and movements suggest crying, in others they suggest some kind of tic or convulsion. Often beauty is greatly increased or indeed evoked in faces that are ugly when sober, and ugliness that suggests defect or even deformity first appears in the laugh. The eyes are sometimes open, sometimes shut; they usually grow bright, but occasionally dull; both lids may tremble and the ball twitch as in nystagmus. They may grow rigidly fixed or roll wildly, may be turned upward and inward, and are often suffused with tears. The mouth, too, takes almost every variety of position, as does the head, and almost any sequence may be inverted.

In the height of the laugh in some cases the chin quivers ; the diaphragm movements are sometimes almost convulsive ; some plant the elbows on the knees ; others rock violently sideways, or more often back and forth ; the hands are thrown into the air or clapped on the thighs ; the face is distorted by various puckers, squints, wrinkles all over the forehead ; lacks in symmetry, especially if there is embarrassment ; the limbs jerk ; the foot is stamped ; the fists pound ; the face is sometimes distorted almost beyond recognition ; waves of nervous tremor pass over the body ; the face, neck and ears are red ; the veins distended ; the hand is placed over the eyes, mouth, or both ; cheeks puff ; some show every tooth, and one can see almost down the throat ; the saliva flows ; little children jump up and down, lie on the floor and roll all over the room ; some swing the hands in the air ; the breast heaves up and down ; some turn around on the heel from left to right, or *vice versa* ; the head shakes from side to side ; many find it almost impossible to stop ; about a dozen in our returns laugh with marked asymmetry ; some show excessive surface of gums ; others always hold the sides with both hands ; others roll the head ; features often twitch or tremble convulsively. Embarrassment and affectation very greatly modify both the gestures and the noises in laughing.

Each of the above expressions may be perverted or repressed to a strange grimace, simper, snicker or giggle. Some laugh mostly within, with very few of the above expressions, of which while none have all, most have some. Two of our returns, on the other hand, describe laughter so intense that death from ruptured blood vessels ensued. The degree of risibility is a very fluctuating quantity. Some young children are so ticklish that a pointed finger will convulse them ; others giggle at almost everything, and are victims of provocations to laugh that are sometimes incessant and almost cruel, yet other children are stolid and rarely laugh. Very diverse and interesting is again the difference in the tempo and rhythm of the laugh. Its onset may be very gradual or instantaneous and explosive, and the cachinations may be deep and strong, and the tones from the chest, or a shallow rapid titter. The individual fluctuations in all these respects, with mood, fatigue, etc., are considerable.

The vocal expressions of laughter are extremely diverse. The sound most generally emitted is described as he, he, passing over to ha, ha. But almost every kind of noise occurs. *F.*, 17. Is said to "bray somewhat like a donkey." *F.*, 15. "Cackles." *M.*, 28. Makes a loud guttural

"yock." *M.*, 10. Laughs "somewhat like a rooster." *M.*, 21. "Snorts." *F.*, 15. "Grunts like a pig." *F.*, 20. Laughs without vocalization, but with a noise like the emission of steam. The laugh of Chinamen is described as a chattering sound. One laughs "deep down in his chest;" another "laughs up among his teeth;" another is said to have a laugh which is said to be like a "fog horn;" another "rumbles." *F.*, 17. "Yells and shrieks." *F.*, 10. Laughs with a "simmering laugh." *M.*, 16. With an "explosive staccato sound." Some make no noise at all, others sob or make a noise that seems like crying. Some are said to snarl, others make a very soft te-he, others a loud ho, ho, three are said to "neigh like a horse," some only gasp, some laugh in a very high, some in a low key, some make noises said to be indescribable or between a laugh and a cry. Every vowel and most consonants are used in our returns in efforts to describe noises. Some "laugh like parrots, crows, peacocks, sheep, goats;" some make a "scraping, rasping, throaty noise," and some a very musical tone; some go up and some go down the scale. Other laughs are described as "tse, tse; ucle-ucle; hep, hep; haw-haw; wah, wah; iff, iff; hickle, hickle; kee, kee; gah, gah." Some laughs are described as "trilling, rippling, quacking, chuckling." *F.*, 16. Begins ha-ha at upper do, and runs down the scale, then drops to first note and runs up again. *F.*, 15. Runs down the scale with a very musical ha, ha. One laughs up and then down the scale without any trace of mirth in her voice or face. Another draws her breath very hard through the nose, and her laugh is a "peculiar snuffle." It has been said that adult men more often laugh in o and a, while children and women laugh in e and i.¹ These latter vowels have naturally, as Helmholtz has shown, a higher pitch than the former.

The *after effects* of a hearty laugh are generally described as exhaustion, heavy breathing, fatigue, shame, weakness, depression, soberness, sadness, relief, weakness localized in various parts of the body, the deep sighs, giddiness, perspiration, headache, stitch in the side, soreness, thirst, sweating, chills, sleepiness, uncontrollable movements, nausea, tears, fear of impending disaster, breathlessness, etc. On the whole, then, the laugh is not unlike an epilepsy from the aura, at which stage it may be checked to the subsequent exhaustion.

Opposite as are our states of pleasure and pain, their expression is not so dissimilar but that in some cases of immaturity, hysteria or extreme provocation, they are confused.

¹ "Gratiolet, *D' la Physionomie*," 1865, p. 115.

Cases of each of these are such as the following: A company of young people, of both sexes, from 19 to 24, were sitting together when the death of an acquaintance was announced. They looked at each other for a second and then all began to laugh, and it was some time before they could become serious.

F., 20. Must always laugh when she hears of a death, and has had to leave the church at a funeral because she must giggle. *F.*, 18. On hearing of the death of a former schoolmate felt very sorry, but could not control her feelings, and laughed as heartily as she had ever done in her life. Despite her effort to be serious she had to break out into a laugh repeatedly. *F.*, 19. Often laughs when she hears people speak of the death of their friends, not because it is funny or pleases her, but because she cannot help it. A frontiersman, in a well authenticated case, came home to find his dearly beloved wife and children all lying dead, scalped and mutilated by Indians. He burst out into a fit of laughter, exclaiming repeatedly, "It is the funniest thing I ever heard of," and laughed on convulsively and uncontrollably till he died from a ruptured blood vessel.

It has been shown by the very careful experiments of Brücke that when the head is thrown back, shoulders up and the body generally is bent backward, the blood tends to flow from the arteries, where pressure is high, into the veins, where pressure is low. If laughter is more often associated with the latter position, and crying with the former, this would go far to account for the subjective difference between the two, and would connect the relief of a laugh with the remission of arterial tension.

On the whole the phenomena of violent laughter seem, when looked at coldly, strange to the point of weirdness, and almost inhuman, although it is most conspicuously seen in man. Why do we gasp and emit animal noises, fall into partial cramps and spasms that may end in coughing, yawning, pain all over, general indifference and disgust at the very cause of our laugh? Why do we strive by holding the breath, biting the lips and other inhibitory efforts to check this diffusion of excitement, which makes the heart throb, the blood dance, gives a sensation of levitation and then passes on to a state almost of swoon and atavistic and perhaps pre-human convulsions? Is Vasey right¹ in his contention that man is not originally a laughing animal, that laughter is not universal among primitive people, that many ancient races

¹"The Philosophy of Laughing and Smiling," 2d ed., London, 1877, especially p. 194.

regarded it as undignified, and that a gentleman and lady should smile, but never laugh? Is hearty laughter invariably a type of vulgarity, shallowness and want of dignity? Should not only tickling and every appeal to the risibilities of children be banished? and indeed does a sad mood unfold a wider mental horizon than a joyous one? How far can we, or should we try to repress all unpleasant expressions and noises in children, and how far would our efforts to do so be likely to result in affectation worse than the disease? Forty-five say we should educate children to laugh aright, seventeen think we should not do so.

All these are questions which in this early stage of investigation into this vast and fascinating topic we must ask, but cannot yet answer.

It is noticeable that if we conceive laughter as one of Hughlings Jackson's "innumerable epilepsies," it is in the majority of adults, one of those which begins with the highest level in consciousness and with the finer muscles, and passes downward to lower levels and more fundamental and earlier developed musculature, although sometimes in children this order is exactly inverted. Expectation, perhaps all that is available, is strongly generated in the higher regions of consciousness; the resulting movements pass down the genetic and perhaps meristic levels till circulatory, glandular and even intestinal and excretory activities are affected and the sphincters relaxed. The mental horizon of expectation was the largest, but this narrows down to the most intense focalization upon the mirth-provoking object till the soul is, as it were, impaled on the sharp point of the jest. The objective world has vanished and is forgotten, the proprieties and even the presence of others are lost, and the soul is all eye and ear to the one laughable object. Care, trouble, and even physical pain are forgotten, and the mind, as it were, falls back through unnumbered millennia and catches a glimpse of that primeval paradise where joy was intense and supreme, and where life and the joy of living were both inconceivably vivid and were expressed by the most generic, primeval and correspondingly energetic sounds and movements, from which all other and later human sounds and movements have sprung. Perhaps such condensed joy and such erethic manifestation of it lack economy in our world of indirect, reflected, derived and dimmed pleasures, and, perhaps, adults should not, as children may, go to heaven in a laugh. It is a fact of peculiar interest that many children in our returns laugh habitually at nothing, except the mere joy of being alive and the euphoria of their own spontaneous movements of mind and body. Just as there are psychalgic states in which every

activity is pain, so we must postulate hedonic states in which every activity gives pleasure. How and why this reacts into the sigh, the natural history of which Henle has discussed, and how the intermittent element is connected with the respiratory apparatus in the medulla, whether laughter intensifies expiratory and a sob inspiratory movements, our returns give no data to determine.

The data of our returns make it possible to treat these topics in a more concrete and objective way than has hitherto been possible. Most treatises on æsthetics have approached the subject from standpoints that were abstract and theoretical, if not indeed metaphysical. As in most fields of psychology we have drifted too far from the homely facts of common, every-day average human life, and have emphasized the exceptional and have wandered to many speculative fields. The above data seem to fall into a few natural groups, and suggest that the act of physical tickling is very basal for any proper treatment of this subject. The importance of animal acts and noises, the relations of laughter to fear and joy at calamity, are rubrics the importance of which both for science and education is not adequately recognized in the literature, while the new standpoints which seem so obvious and inevitable to the biological mode of thought have not yet been suggested. The present paper, although intimating these new points of view, is so inadequate to the vast and hitherto unsuspected complexity of the subject that it can hardly claim to be more than notes calling attention to the need of further detailed work.

II. *Tickling.* From the mass of returns the best upon this subject were selected, and show that children are most ticklish as follows: soles of the feet, 117; under the arms, 104; neck, 86; under the chin, 76; waist and ribs, 60; cheeks, 58; knee, 25; down the back, 19; behind the ears, 15; all over, 15; palms, 14; corners of mouth, 8; breast, 8; nose, 7; legs, 5; elbows, 3; lips, 3; etc.

Some of the above children mention several places, and so appear several times. "Tossing up is mentioned 11 times; blowing on the cheek, down the back, behind the ears, in the eyes, pinching toes, are each mentioned several times. The tickle zone is often spoken of by children as the funny place. Unexpectedness, a delicate instrument like a straw, feather, ravelings, rubbing, a cold draft on the spine, playing bite the finger, pointing toward and threatening to bore into the body, are all mentioned. Two small children are so ticklish they scream with laughter if touched. One child laughed in its sleep for ten minutes after being touched on the sole.

F., 17. If tickled under the arm slides to the floor and screams with laughter. If any one whispers in her ear she must laugh. If a friend blows upon her skin or makes a buzzing sound, she writhes and screams. *F.*, 3½. Is stout, and shaking her always makes her laugh. *F.*, 10. Feels ticklish and must laugh if swinging, even in a hammock. *F.*, 17. Feels ticklish and must giggle in going down in an elevator. *M.*, 20. Is very ticklish for every creepy, crawly motion if only just felt. *M.*, 4. Can be tickled only by pointing at him.

A special supplementary question as to where children were most ticklish shows the following in order of frequency: soles of the feet, under the arm, neck and throat, ribs, back, under the chin, stomach, knees, at sight of pointed finger, cheeks, palm, upper lip, nose. Contact of the soles of the feet may cause almost agony. The word soles sometimes causes slight tickling. Sensitiveness to faint contact may vary with the state of feeling, *e. g.*: *F.*, 20. Is always ticklish in the soles of her feet and in one or more other places, according to the state of fatigue, mood, etc. Many mention sensitiveness to contact or movement, perhaps, especially if zigzag, just heavy enough to be felt. A few seem almost equally ticklish in every part, and others solely in exceptional parts, like the palm of the hand. When near the cry point, some children, otherwise very ticklish, are like stone to every stimulus. Simply pointing the finger at many sensitive children, especially if it is rotated in a spiral motion, sometimes causes laughter so intense as to be almost hysterical. Some are ticklish only near bed-time, or when very tired.

Sixty clearly marked cases are more ticklish at one time than at another, as when they have been "carrying on" or are in a happy mood, are nervous or unwell, after a good meal, when being washed, when in perfect health, when with people they like, etc. Some are more susceptible through sight, others through hearing or touch, and some are specially sensitive in the sphere of smell, and some even of smell and taste. In 107 cases laughter or tickling results from merely seeing a finger pointed with movements suggesting tickling. Slow circular movements of the index finger, then stopping these and thrusting it toward some ticklish point, especially if with a buzzing sound, make many young children half-hysterical with laughter.

Many children in these and other returns form the habit of picking the skin. Not only scabs, to which childish instinct seems to have a great aversion, but pimples and the slightest roughness often excite very strong desire to remove them. Often they have been observed to pick for hours continuously and physical restraints sometimes become neces-

sary. Occasionally larger scabs, due to wounds, are worked on with growing impetuosity until they are removed. Occasionally a child purposely cuts or abrades the skin on its hands, not to remove roughness, but apparently to create a scab. One grew fond of dropping the grease from a lighted candle on his hands for the sake of the pleasure of picking it off afterwards. Hang-nails, callous bits of skin or those loosened by blisters are often removed with great pain. Some children pull out the hairs from head, eyebrows, lashes, hands, and elsewhere despite the pain. Two games of rubbing the skin off of the back of the hands became fads; pins are thrust through the cuticle and the skin broken. Children dare each other to cut, bite, or otherwise get through the skin, not so much to see rawness and blood, which they abhor, or have sores dressed, as to gratify some deep impulse to fuss with the skin.

It is hard to explain such instincts, and indeed they are hard to analyze. A slight pruritus; automatic instincts on the motor side to pick, perhaps stimulated to far greater intensity by the pain itself; the impulse to remove roughness, perhaps a hunger for some specific dermal sensation in children slightly anæsthetic analogous to "light hunger of the eye;" a desire to gratify the exquisite tactile sensation of smoothness which in hand-shaking and the caresses of lovers is so important a factor,—all these may have been elements, and may have played an important rôle in natural selection and in the original depilation of the human body, the proper stroking of which is still a source of pleasure.

The strange sensitiveness to minimal tactile impressions all over the body has never been explained. Although Frey, Goldscheider, Nichols and others have sought to measure its intensity, no modification of this strange reversal of the psycho-physic law for that scale of stimuli which causes greater reactions, the slighter they are, has been given that is satisfactory or that has won general acceptance. Why is it that contact with the finest hair, wool, or cobweb evokes sensations that are not only exceedingly intense, but also very widely irradiated, and also provokes reflex movements that may be convulsive in their intensity, but when the same pressure, it may be of the same object and upon the same spot, is slightly increased, only the localized and moderate impression of touch is produced, with proper or no motor reactions? This paradoxical phenomenon is so unique and so distinct from that caused by stronger pressures on the ribs and elsewhere that it should no longer be included under the general term ticklishness, but should have a different name. Pending a better nomenclature we suggest for the former the

term knismesis and for the latter the term gargaesis, with the adjectives knismic and gargalic, hyperknismesis and hypergargaesis for excess, etc.

Primitive organisms had only the sense of touch. For them there was no sense of gradual approach, but danger was announced only by contact, and therefore came with great suddenness and caused strong reactions of escape or resistance. The gradual evolution of sight and perhaps smell and hearing as an "anticipatory touch," mitigated the primitive shock in which, perhaps, all psychic life originated, and enabled preparatory adjustments to be made. Growing psychic life distinguished between dangerous and harmless touches, but so inconceivably long was the ontogenetic period before these reductives became established that traces of the old psycho-neuroses are not effaced. Although we know little of their neural basis we can often catch glimpses of the adaptiveness of these primordial reactions. Again the very energy which minimal stimuli develop has no doubt now a prepotently trophic significance, and yet again their dynamogenic service for higher processes, even those which inhibit them, is no doubt great. Once more as the psychic field has enlarged and attention has acquired increasing power to abstract available energy from its negative field to focus it elsewhere, unusual sensations in rarely functioning parts revert, so that, especially in states of fatigue and in regions where inhibition is rarely needed, outcrops of the old tendencies are seen. Stronger touches evoke inhibition, long-circuit processes into the field of intelligence and will, which act by the very energy thus developed. These minimal touch excitations thus represent the very oldest stratum of psychic life in the soul, and have still in their strange sensitiveness and energy reminiscences of the primeval vigor and spontaneity of the dawn of psychic life, and especially of sight and hearing, in the world. Thus keenly did organisms feel the world about them, thus intensely did they react to it in that eocene age of the soul before the soma had been mechanized, and before its vitality had lapsed to a degree of vigor which separated it so far from that of the reproductive elements and established death so firmly in the world. It is thus with growing interest and awe that we contemplate these phenomena.

Homelier and more vulgar experiences must also be suggested. The insect world in all its immensity has always been a part of human environment, and has no doubt played an important rôle in the maintenance and development of this psychosis. Parasites of many known and perhaps more unknown species have always infested the skin, and a large volume of animal activities are still directed toward their re-

moval. Some are dangerous and must have evoked reactions of corresponding force like the almost spasmodic movements of the horse at the slightest touch of the bot fly, which sticks an egg on the tip end of the longest hair of its gambrels or fetlock. The fact that even a few are dangerous strengthens the movements against all, while the fact that their attacks are almost incessant establishes a stronger habit of reaction than do the attacks of larger but more infrequent enemies, on a principle analogous to that which makes small but certain punishments more effective than severe but uncertain ones as deterrents of crime. Again, the slighter and less dangerous experiences less often kill, so that their effects accumulate.

Belt, in his "Naturalist in Nicaragua," suggests that man's hairless condition was perhaps brought about by natural selection in tropical regions, where he was greatly troubled with parasites. Hudson in his "Naturalist in La Plata," (p. 143) says it is almost necessary to transport oneself to the vast tick-infested wilderness of the new world to appreciate the full significance of Belt's suggestion. He affirms that it is quite certain that if in such a country as Brazil man possessed a hairy coat, affording cover to the tick and enabling it to get a footing on the body, his condition would be a very sad one. It is of course well known that savages abhor hairs on the body and even pluck them off their faces. The soft lanugo hairs with which man is still covered point back to the time when the whole body was covered with a disadvantageous coat of hair. There is certainly more than training and education in the instinctive furor and impetuosity noticeable in the habit of picking scabs and removing excrementitious matter and disadvantageous excrescences from the surface of the body.

Whispering in the ear may cause a recrudescence of the old sensitiveness out of which its functions were developed, and the more we understand and are impressed by the whispered words the more this hyperesthesia to the noise and breath stimuli decreases. The often excessive itching caused by very slight movements adds the sense of life to that of contact to the object which touches, while the noise of buzzing as a laughter excitant suggests its own explanation.

Very different is the lesson which is taught by the list of parts of the body which are most sensitive. Lowest in the scale are points like the shoulder-blades, shoulders, thighs, calves, etc., harder touch and even invasion of which are dangerous only in a low degree. The soles of the feet, throat, knees, palms, etc., are far more vulnerable, and contact with these carries with it a higher degree of what may be called

physical suggestiveness of danger. In the long struggle for existence wounds or thrusts here have caused more pain and inconvenience than in less vulnerable regions, or even than in those that were more so, because the latter have killed, while the former have been consistent with long survival and pain, with the possibility of recurrence. Pointing at these parts without touch, boring motions, gestures of biting, stabbing, or any other form of invasion, here evoke the gestures of danger and its excitability without any strong sense of it. These "clotted masses of motion" have their sensory analogue in the felted and macerated masses of sensation, caused by stimulating the soles of the feet. The latter, with its modern mode of treatment, is but a decadent rudiment of the foot of primeval man, or his anthropoid progenitor, which in grasping power, length of toes, exposure and manifold uses once approximated the hand. In it we have thus a type and norm of how organs and sensations, once elaborated, but now shriveled and atrophied to a pulpy residuum, appear. The throat and inner part of the thighs, so much more exposed since the erect position was acquired, are very ticklish. The sexual parts have a ticklishness as unique as their function and as keen as their importance. The faintest suggestion of them has great power over the risibilities of children. In most of the above parts the peculiar quality of these sensations is evoked only by contact, with some degree of pressure. These sensations could not have been established until the differentiation of parts was well made, and they must hence be less paleo-psychic than those for minimal contact with its "all-overish" sensations. They have, however, the primitive quality of undecomposableness, reflex vigor often transcending control, and of being common to men and animals.

Tossing, swinging, etc., as laughter excitants, suggest the philophobic sensations described elsewhere in connection with gravity fears,¹ while novelty or the development of reactions for the first time in the individual, which are very old in the race, constitutes a standpoint, and probably a class.

The reaction time for pressure-touch in sensitive and vulnerable parts is very short, while that for minimal contact is very long, and appears to be about the same as that for pain. Whether, like the latter, its tract is less established in the spinal cord, or its peculiar sensations are mediated by sympathetic and vaso-motor fibres, we do not know. They no doubt belong, however, in the same group as pain, sex sensations and conæsthesias, and must be con-

¹ "A Study of Fears," G. S. Hall. Section I, Gravity Fears; AM. JOUR. PSYCH., Vol. VIII, No. 2.

sidered, in our opinion, as the true physiological complement of primordial sensations of pain,—traces, possibly, of the first pleasures not directly due to food and sex with which psychic development began. Just as, on the one hand, everything which caused pain was avoided, so everything which caused those sensations, of which these are the remnant, was sought. They represent, too, the satisfaction in activity of over-rested and therefore very labile centres, and perhaps the very touch-points of Goldscheider are, in a special sense, their organs.

Finally, it cannot be said too emphatically that most of the above points, as yet, lack final experimental demonstration, although, in a field so tempting, we cannot think that laborious research will be long delayed.

III. *Animals and their Acts.* Most familiar animals, their forms, actions, and, it would seem, especially their noises, are sources of great merriment for children. So are, secondarily, imitations of these by adults or other children. So intense is the pleasure arising from this source that often even the mention of the animal's name—donkey, monkey, pig, dog, jackass—provokes irrepressible laughter. Many nursery songs and games give abundant illustration of this fact. In our returns the order of frequency in mentioning animals as mirth-provoking is dog, cat, pig, louse, monkey, rooster, crow, chicken, duck, ape, goose, sheep, cow, horse, pollywog, parrot, turkey gobbler, frog, owl, etc. It is interesting, and indeed surprising, to see how even the suggestion of a grunt, squeak, bark, hum or buzz, snort, whinny, bray, quack, caw, mew, cluck, bleat, squeal, croak, crow, chirp, touches the risibles of children, especially, of course, if they are where they ought not to laugh, and how much pleasure some of the animal calls which Mr. Bolton has collected give. Many boys become virtuosos in imitating various animals or the songs of birds, and always to the intense delectation of their mates. Young children sometimes laugh with such abandonment at some special imitative animal noise that stories that abound in them have to be modified. Of all the sounds enumerated, animal noises greatly predominate over all others. It is less the elements of suddenness or strangeness that cause the funny feeling, than it is the direct suggestiveness of the animal itself.

The antics of animals are a source of great amusement to children. They pull down the corners of the eyes and pull the mouth open, put their hands to their ears, crawl like snakes, root like pigs, fly like birds, swim like fish, catch and devour prey, make faces, wear animal masks, form shadow pictures, watch animals and laugh at and perhaps imitate their

every movement, personate trick animals. In 33 cases imitation of animals became persistent and troublesome. Some children desired to be, and others thought they were becoming some favorite animal. They play that they have claws, trunks, tails, tusks, big teeth and eyes, eat, drink or sleep, walk, play like animals. Games that involve catching or grabbing are often very mimetic of animals, and are always hilarious. The element of suddenness, too, often intensifies this factor. The wearing of animal masks, of great variety, has always been a source of great pleasure for children, and even plays a very important part in the games and ceremonials of the Chinese, most European folk-lore and amusements, in mediæval revels and in savage dances. Pinning on tails, ears, horns, feathers, mane, wings, going on all-fours, enacting the animal eposes that have come down to us from the middle ages and from remote antiquity, with the aid of these accoutrements suggest that if, according to Lotze's theory of personal adornment, we feel ourselves extended to the tip of every ribbon or skirt we wear, and feel pleasure in thus extending and transforming the fixed limit of our skin-bounded ego, children must approximate the animal consciousness by these devices. On the other hand the long struggle of man with the other animals for survival and supremacy, the history of domestication, the folk-lore and religion of totemism show us what a rôle animals have played in human fear, reverence and even love in the past.

Modern studies of anatomy show that not only every organ of the human body is inherited from an animal ancestry, but that we all have some hundred and forty rudimentary organs which in lower animals were essential, but which in man are atrophied by disuse. Whether, or if so how, these dwindling parts modify human consciousness, we do not know. Nothing would be more rash than to assert that the fact that both the bones and several pairs of muscles that are still represented in the human coccyx has anything to do with children's amusement of pinning on tails. Nothing, however, is better established than that there is a closer rapport between animals, especially those that are domesticated, and children than is the case with adults. From the myths of feral children living with beasts to the familiar facts that domestic animals are often more nearly related and in closer sympathy with children than with adults, and from the fact that rudimentary animal organs are relatively and often absolutely larger in children than in adults, to the greater similarity of the early vocal utterances and gestures, as well as of infantile psychic states and processes to those of animals, we cannot argue, but only conjecture and wonder.

The more we know of animal instincts the more we are impressed, not only with their marvelous adjustment to their environment, but with their vast range, volume and complexity. The deep-sea organisms, the coral insects, migrating fishes, birds, animals that hibernate and estivate, nest building, quest of food, avoidance of enemies, the manifold marvels of the insect world, animal societies,—all these taken together represent an adaptation to conditions compared to which the entire human psychosis seems limited in range, artificial, and honeycombed with self-consciousness in method, and on the whole monotonous and narrow. It is easy to imagine totally different orders of intelligence as great as that of man, unfolded under conditions of life as different as his from that of birds, fishes or earth-worms. The life of childhood, from its very nature, is nearer the parting of the ways which open into all these undeveloped possibilities. Its more generic soul lingers with the charm of these upon it. It sympathizes with, pities, takes the place of, imitates many species of life and catches glimpses of the universe from these many and very diversified standpoints. This wide-ranged childish capacity is intimated in metempsychosis with its theories of incarnation in every possible and often impossible form of animal life. Just as adolescents stretch the soul by having a series of crazes, fads or enthusiasms, more than if they go to seed on the first one; just as Hippias would learn something of all trades before he sought mastery in one,—so childhood widens the range of all its powers by these close sympathies with animals, and also gets a far more vivid impression of vanity from knowing the peacock, cunning from the fox, boorishness from the bear, stubbornness from the mule, slipperiness from the eel, glory and patriotism from the eagle, strength from the lion, etc.

The pleasure element in all this must be carefully distinguished from that of Groos, whose theory of play as direct preparation for the activities of adult life (*Vorübung und Einübung*), is obviously wrong here. As an at least partial explanation we here propose the following new view: Rudimentary organs need to be not only developed, but often used in order to dwindle in form and function, and to make place for the next higher organs and functions for which they, in the higher forms of life, are mere, although indispensable, succedanea. Stimulus and use, at a certain stage, seem to be necessary, not to make them develop, as is the case with most tissues, as all Lamarckians hold, but to directly cause their gradual atrophy. Whether the latter itself is the stimulus for the growth of the next higher organ and function, or whether these are mainly developed under the direct influ-

ences of the stimulus, we do not know. Now there must be therefore a class of activities, absolutely without direct use for the future, but indispensable for the development of higher powers, and the above reactions of childhood to animals must, we suggest, involve elements of this kind. Just as on the Aristotelian theory of Katharsis men see exhibitions of cruelty and crime on the stage to their great delectation, and thereby discharge instinctive tendencies to crime in their own souls without harm to others, and at the same time develop the power to control such tendencies in the future, so children's play with animals marks the harmless development of rudimentary animal instincts as they pass to their needed maximal growth, till the next higher powers that control and subordinate them are unfolded, thus recapitulating with immense rapidity a very long stage in the evolution of the human out of the animal psyche. The pleasure element here is great because the unfoldment is so spontaneous, rapid, and because nowhere is so large a section of the generic development of the race condensed almost within the range of the consciousness of the individual. The best illustration of this is probably found in the gradual reduction of childish fears under the influence of growing knowledge, and this is so important an element in childish joy and laughter as to merit more careful examination in the following section.

IV. *Recovery from Slight Fear.* This factor appears more or less in both the above rubrics. Unusual gestures, mimicry of dreaded creatures or acts, the simulation of anger, the parodied biting or eating, jumping out at, and peek-a-boo, pretended fights, pseudo-scares, such as simulated lameness, cramps, fits, automatic movements, grimaces, etc., if very carefully adjusted to suggest, and then instantly and completely disarm fear, or if repeated, so that the subsequent pleasure can be anticipated before the fear has become too intense, are perhaps as certain to provoke laughter as anything. Here appears the contrast which many writers think a dominant factor in the ludicrous, as well as Herbert Spencer's "descending incongruity." The shock or fear element seems to increase irritability, and the energy thus made labile overflows in all the phenomena of cachinnation. These nursery experiences again tend to lift the child above some fears, so that the pleasure of transcending them and laughing at what had just been feared is also involved.

Closely connected with, and often a part of this fun psychosis is the pleasure in unusual acts and attitudes generally, such as walking, speaking or acting in some funny or exceptional way, doing *outré* things, making faces, many forms of caricature, and especially of practical jokes, involving

grotesque mishaps for the individual, or for others. The fear element in many childish games is often no less fascinating than the forms of dermal titillation; possibly, too, the analogy between them may be far closer than we are wont to think. Just as we take pleasure in mild and easily overcome fright, because thus we are stimulating rudimentary psychic organs to gradually vanish and make place for others, which could not exist without their mediatizing function, so love of dermal friction may reverberate with remote ancestral echoes, and develop traces of old and ruder impacts into higher forms of tactile sensibility. At any rate, the overcoming of old and hereditary fears seems always to involve the generation of tension and then the discharge of pent-up energy.

The importance of a wide range of well developed but not too intense fears in early childhood has not been sufficiently understood. Perhaps nothing is more effective in developing attention to its full power, and also deepening and multiplying interests. If it be true that one of the chief functions of knowledge is to reduce fears, it is not yet realized what a vast source of incentive to knowledge can be derived from fears. Psychic zest and intensity of joy are rarely greater than just at that moment when the child is in the act of learning how to cast out fear, when it first touches the dreaded dog or other animal, and finds it harmless, when it braves its fear of falling and walks its first few steps, when it first defies solitude or darkness or dread of falling, etc. To be able to substitute a joy for a dread, to conquer a hitherto forbidden field of either thought or action, to enter by sympathy into a new form of life, formerly barred to it by dread, constitutes one distinct element in the very manifold causes of laughter, because it again widens the range of the soul's activity instead of contracting it as does pain. This philophobic experience seems not unworthy a name as unique as it.

V. *Laughter at Calamity (Schadenfreude)*. In reading over the returns to this questionnaire and that on teasing and bullying, and several others, a very dark side of human nature becomes painfully real and apparent. It would be hard to find any disaster so great that it has not been a source of genuine mirth, not only at scores of petty misfortunes, like the loss of hats in the wind, falls involving the breaking of eggs, spilling of sugar, berries, etc., turning of umbrellas, but severe accidents involving the gravest pain and danger to life and limb, and even death itself, may provoke unquenchable laughter. Often children and even adults laugh when they know they should not, till they are ashamed, until it pains them, and say they must

laugh if it kills them. A little girl, described by Mr. Russell, danced on the just made grave of her dearest playmate, chanting over and over, "I'm so glad she is dead and I'm alive," in real glee. In a well attested case from the west, which was especially investigated, two boys of 9 and 11, after seeing the scenes of butchering day, killed, dressed and quartered their baby sister, imitating with great delight the details they had seen. Not a few of our correspondents confess with genuine abasement that underneath a strong feeling of grief at the sickness and death of their friends, there is an undercurrent of satisfaction, and even joy, which sometimes makes them feel that their sorrow, though tearful, is superficial and hypocritical. It is unpleasant to dwell upon so painful phenomena, because it suggests that human friendship and sympathy have not yet become very securely established in place of the old war of all against all, which characterized the long ages of struggle for survival. Primitively, death of friends meant more food for the survivors, and even yet involves a distribution of effects. Now, too, it means new places, added opportunities, and sometimes new and closer friendship between survivors. The baser passions of envy, jealousy, hate, also may find real pleasure in the extinction of life. Pain and illness often cause secret satisfaction, which is recognized with dismay and confessed with mortification, even when they befall those who are really loved. It is sad to reflect upon the results of honest introspection and careful self-analysis upon this subject, which suggests hereditary rudiments so carefully and instinctively concealed by the higher impulses of human brotherhood, but which still lurk about the roots and taint the pure fountains of benevolence and philanthropy.

In anger, as a future paper will show, laughter in a few rare cases, not hysterical, appears when the victor has attained his object, and defeated, maimed, even slain his antagonist. A boy of 10, in a street fight, danced and screamed with laughter after he had stabbed and cut his playmate to death. Another, of 5, pushed a little girl from a high window and capered and shouted with pleasure that she was bruised and mangled by the fall. This instinct to gloat over the suffering of others is far more commonly directed towards animals, but some children find great apparent joy in venting their spite in secretly setting fire to buildings, breaking valuable ornaments and furniture, puncturing bicycle tires, rage against children who are loved by others whose affection they desire for themselves. The rapture of anger, when it completely attains its goal, is not confined to children of marked morbid or criminal propensities, but may break out in those

of normally good nature and kind heart like a sudden obsession or insanity. On the other hand there are natures that seem to be almost without natural sympathy, as every criminologist knows. In many, and perhaps most, there is a period, commonly brief, before the social instincts are unfolded, when the infliction of extreme pain is a passion so dominant as to lead Ireland, who describes its extreme form in monsters like Heliogabalus, Caligula and famous modern criminals, to designate it as the insanity of power; children, who can effect little that is good in the world, can develop the sense of being of great consequence in their immediate environments, not only profoundly affecting the course of things about them, but indulging the morbid passion for notoriety by unnatural and sometimes enormous crimes against both person and property. The sense of being able to bring things to pass, and of being the cause of intense feeling and great activity, thus may come to express the early crude and blind stirrings of ambition in natures of unusual strength, the factors of which develop in irregular or inverted order.

Weak natures that cannot excel in the open field of fair competition and natural selection, are no doubt always tempted to resort to the unfair means of removing or handicapping rivals in life's race. Exultation, then, has a common element with successful ambition. Jealousy has its own joy. The criminology of adolescence often shows this feature. It is manifested in ancient songs of victory, pæans, triumphal marches, and shades over into the exquisite joy of teasing. It all shows how inveterate and primordial selfishness is, how slow and hard are the stages by which it is inhibited, and is in line with the current theories by which pleasure attends everything which is expansive, whether in soul states or in the environment.

Again, as if to illustrate the theory of Nietzsche, that pity is an unworthy human sentiment, children are often prone to imitate and exaggerate physical and psychic defects. Our records abound in descriptions of mimicry of lame children and adults, of bow-legged men, of ugly old women whom gangs of boys follow and hoot, of both spastic and tabetic gait of paralytics, of cripples without legs, beggars who hobble or walk on their knees or use crutches, of humpbacks, idiots, the blind, deaf, foreigners, etc.; while birthmarks, scars, dwarfs, deformed features, tics and automatic movements of limb or face, illiterate expressions, and even the twinges and convulsions of extreme pain, evoke mocking and hilarious laughter. Some young women have special and imperative risibility when they hear of failures in business, when their brothers, sisters or mates are punished, or giggle at any

trouble which befalls their acquaintances (*F.*, 16, *e. g.*, must laugh whenever she hears or reads of people who are either sick or poor. *F.*, 18. Has to laugh at all queer people or negro children), and specialization in the sense of the ludicrous, as excited by defect, loss, or oddity, is not infrequent. Stuttering, provincial speech, brogue, foreign accent are frequent topics for these virtuosos of mimicry, which are often exaggerated to the point of caricature. Such cases mark the transition from pleasure in misfortune to that which we are so prone to take in what is exceptional and unconventional. They also illustrate the proneness of childhood to explore all the possibilities of human life. This is especially true of such imitations when in solitude. When they occur before others, the alien motives of desire of applause for cleverness and skill come in. The laugh of the on-lookers is in part admiration of imitative cleverness, but also partly exultation over defect or eccentricity.

VI. *Practical Jokes.* Closely related to the impulse to laugh at the defects and calamities of fate is the instinct of rigging, coarse horse-play and clapping the fool's cap upon some innocent and unsuspecting victim. It would be easy to fill our space with records like the hiding of hats, the sewing up of sleeves, removing the slats from beds that the occupant be doubled up like a v, painting pansies on the bald pate of a sleeping uncle, upsetting wagons, painting cows, hoisting calves to college belfries, bent pins stealthily placed in chairs, pinning papers and legends, etc., upon the garments, generating noxious fumes, sending bricks done up in dainty parcels, cutting hair and whiskers, ducking, mock initiations, painting pickets, doors, statues in unseemly form, concealing books, clothing, glasses, doctoring food, sending on fictitious errands, condemning to do absurd and ridiculous things, awaking every kind of false expectation, modes of frightening of scores of kinds, and all the historical traditions of Hallow-e'en and All Fools' Day. Flögel's "*Geschichte der Hofnarren*" (1789), and Doran's "*History of Court Fools*" (1858), show us what rude, cruel practical jokes were played by kings, court and cultivated people a few centuries ago. Nero cut a man in two to convince him that he was not, after all, a single person, but two. Another Roman emperor invited a friend to a large banquet, and uncovered a dish in which were the heads of the wife and children of his guest. A cheap comedy theatre shows us how the practical joke, banished from the cultivated classes, where it formerly held sway, still prevails among the lowly, as it does among savages and children in a still raw and more flaying form. The greater the discomfiture or even pain, the madder and more

furious the fun. Personal rights are no barrier, and respectability is a favorite mark for this crude pastime. Goethe well says that nothing is more significant of men's character than that which they find laughable. In these cases common human sympathy and trust of man in man seem quite suspended, and the pleasure often seems about evenly divided between the perpetrator's complacency in his own cleverness and inventiveness, and his exultation over others' pain. The dominance of the latter factor is very commonly seen in the lowest of all these cases, where originality has quite decayed and only the most commonplace and crude devices are resorted to. It is to be hoped that those writers who believe that on the whole mirth is not only growing more refined but less bitter are correct, rather than those who believe that the reverse is true.

As quickeners of dull wits the function of the practical joke is often of great importance, and there is much to be said in favor of many forms of the much-abused college hazing. Many a youth would be greatly improved by it. Its special uses are the following: Many a callow youth has been reared in an environment in which he has acquired a premature self-satisfaction and poise which veneers the soul against the infection of needed knowledge and hide-binds moral and sometimes even intellectual growth. A good course of rough and roistering treatment by his peers tends to make the nature flexible, and to prevent inspissation of character. Again it is an often sorely needed lesson in the control of temper and in hardening hypersensitive minds which are liable to find fancied neglects, and whose *amour propre* is so easily wounded. The trials and reverses of life are in some degree anticipated, and the soul is seasoned to bear their strain. Who cannot name in the sphere of his own acquaintance young men who would have been improved by this rude tonic, injurious though it is to some? Again, the practical joke offers a field for real ingenuity and invention, sometimes in making the punishment fit the crime and often in opening new sources of merriment in this somber world. A collegian who is condemned to kiss every baby he meets in a city street for a day, to wear his coat wrong side out for twenty-four hours, to wear a placard with the legend "kick me," to work for a day cleaning spittoons or sewers, to engage in a beer duel with a cleverly devised comic ritual, is surely not greatly injured, and may be given some needed flexibility and docility as well as taught to control his temper. But in all this group the law of rudiments is dominant. The practical joke is war, cruelty, torture reduced to the level and intensity of play, and must not tran-

scend its bounds. To give and take in jest what was once the wager of life and death, marks a distinct though late recapitulatory state of the development of the soul. It is the culture of religion, art, literature, education and civilization generally which has reduced these fierce and often brutal propensities, and that probably chiefly within the historic period, to their present harmless play forms. The ready acceptance of these cruelties by the victim is instinct's acknowledgment of this real need. Of course forms of the practical joke are found among all savage races in their reduced play form, and sham fights are constantly seen among animals. But besides their function as preparations for future activities, they also stimulate like all activities of rudimentary functions, they serve the purpose of discharging over-rested centres, stimulating primitive impulses not to grow, but to dwindle, and evoking their proper correctives. Men are thus more peaceable for sham battles, and the practical joke allows a harmless vent for the old anti-social instincts, and excites and establishes the dominance of higher powers.

VII. *Caricature*. Perhaps the next highest form is the impulse to that kind of ridicule often designated as "running on," "setting out," etc., in which acts, features, or traits are exaggerated or made ridiculous. Often naïve and even beautiful things are so distorted that the victim, especially if a child, comes to feel shame and perhaps morbid self-consciousness, where confidence and even pride would be justified. Some artists develop amazing capacity to see and depict absurd and perhaps animal features in the faces of public men, and country humor abounds in half-real, half-fancied eccentricities as its stock in trade. The colored man, the German, the Jew, the Yankee, the Irishman, the countryman, the Bowery man, the dude, the cockney, the typical French or Englishman of the comic stage owe their mirth-provoking quality to clever caricatures. So do the imitations of the mannerisms of great actors or orators, singers, etc. College dramatics abound in this and caricature of actors, professors, of unpopular men, freshmen and the other sex. To this mimicry owes its sting, because imitation must be true to life, but with certain parts loudly colored or unduly emphasized, like the magnified keyhole in a child's drawing of a house, or buttons, or pipe in the picture of a man. Every age, community, or often person, has its own strict and often rigidly conventional ideas of what is proper, and every real or fancied deviation attracts consciousness and invites attention. By this means not only fashion, but sometimes good morals and even the orthodoxies of faith are enforced. Manners and the customs of good society find perhaps their very

strongest ally in representations of their violations parodied into absurdity. One function of ridicule is, therefore, to enforce a consensus, whether of the old against the young, or conversely of the wise against the ignorant, or *vice versa*, of party, sex, modes of life, against recalcitrant or exceptional individuals, or against each other. Nothing is done which forces others into absurdity as in a practical joke, but ridicule takes on a function of criticism and rests upon clever misrepresentation of the actual, or gloats over lapses from some standard which, though it may not be formulated, must be very real and definite from which to measure all deviations. When these are made to seem most ridiculous the laughter is most confirmed in the norm or standard.

Here we recognize, still more clearly, the sense of superiority always implied in ridicule. The victim's egoism is abased and, in his humiliation, he may lose self-respect, especially if conscious of the least real ground of ridicule. Very incidental and unconscious acts may be rudely dragged into prominence, and in this way, too, real self-knowledge may be distorted. The victim has the unwelcome task of re-adjusting both his self-knowledge, and what is far more serious, his self-valuation. Society thus resists variation and differentiation, and all reformers, inventors and original souls who have struck out new ways for the race have been made food for the laughter of their contemporaries, while they have often turned the laugh against their persecutors. Thus inertia resists change and psychic types strive to perpetuate themselves. Even ignorance is very clever at burlesque of what is above it, and thus seeks to drag it down.

Caricature may have its root in simple humor, which laughs with the victim, or in satire which laughs at him. The first is a valuable school of human nature, of which it singles out and studies the various elements as parts of a dissected picture. Not only the soul itself, but society has been organized in the remote past by the reduction of ideas, sentiments, acts, sometimes by means of their opposites and sometimes by other needs for restraint. Caricature suggests this time when the soul's various elements were more unrestrained, and thus far more developed. Just as we laugh at animals that have long noses, ears, and other features that evolution has reduced and made harmonious, so psychic traits, untamed and raw, or yet unconcealed by conventionality or by self-consciousness, arouse laughter as an atavistic reverberation, just as we are most ticklish at those points of the body which are most vulnerable. Part of the pleasure here is thus due to expanding the soul to sympathize with a wider range of traits than the individual himself

possesses, and is reverberatory of a past we know not how remote, and an exercise for rudimentary organs of the soul which come into their unfrequent and evanescent functions before they are slowly transformed into higher ones. Humor is based upon sympathy, the field of which caricature enlarges, enriches and diversifies. Humor may evoke sympathy not only with weakness and psychic defect, but with vice itself.

Satire, on the other hand, brings out or caricatures on a basis of truth like humor, but with the opposite effect of destroying sympathy and evoking contempt and aversion from perhaps the same qualities that humor inclines us to love. It comes into power very much later in life and at a much more advanced stage of culture and civilization. Its caricatures are more often those of defects or active sins than of mere eccentricities. The laugh it evokes is bitter because the scorn and contempt are merited, and Hegel has well characterized an age of satire as one of approaching involution and change, when old sanctities are ceasing to be revered. It is a mode in which an old culture or consciousness, or civilization begins to be sloughed off or molted to make room for a better one. Hence the laugh of satire can never be very hearty, but must be somewhat forced, even when brightened by wit. If it deepens into cynicism and misanthropy, it may almost as readily evoke tears as laughter, and hence need hardly be considered here. Sarcasm, which is one of the stings of satire, is very rare among school children. It implies a stronger sense of evil than they have developed, and its use by parents and teachers should be very rare, and only with the most careful precautions. Because, while it very rarely excites laughter, it is very prone to rankle and fester in the soul for a long time afterward.

The genetic root of caricature is, no doubt, largely sympathy. The mother exaggerates the most beloved traits and acts of her child, and her laugh is that of humor, with its object, and not at it. Her pleasure is that of entering into the infant's psychic states. Inability to do this measures her limitations. All imitation is, at root, a kind of flattery. When bad traits appear in those about us, or good ones become excessive, the deep educational instinct of the race has invented ridicule as a method of self-knowledge. As if it knew that self-consciousness was deeply and originally a therapeutic agent, and the soul is infected with it by ridicule just at those points where reconstruction is most needed. Its method, which is exaggeration, is admirably adapted to its purpose, and marks the introduction of an es-

sentially new factor into the psychosis of laughter. In the preceding forms it has been mainly expansive, now it is restrictive. Its function is not primarily the joy of the on-looker, but the enforcement of some orthodoxy, consensus or propriety upon a victim. The implied superiority of the laughter is strongly present, but cannot transcend a certain degree of contempt, beyond which laughter is impossible. Ridicule is therefore punitive, and is sometimes one of the hardest blows that can be inflicted upon one's self-respect. Its laughter is never genuinely hearty, although it is often affectedly so, unless there is a degree of good will at its root. Another element in this extremely complex analysis is due to the ingenuity of the ridicule. In satire and sarcasm, however, the element of sympathy is reduced to a minimum, and there is always a degree of bitterness, and this saps the strongest roots of laughter, so that the treatment of these subjects hardly belongs here.

VIII. *Wit*. This seems, at first, to belong to a very different category, and to have little connection with any which precede. It involves elements in the analysis of which there has been the greatest difference of opinion. Unexpectedness, suddenness, "descending incongruity," have been the chief traits ascribed to it. The quick perception of unusual relations, the opening of new brain paths, the unexpected, but not the unpleasant,—these and other conceptions and definitions of it suggest some break of continuity in thought. Repartee is wit for two. The conundrum and enigma ask for instead of give the unwonted relation. Wit is thus mainly an affair of the intellect, and primarily harmless and without malice. The pun also belongs here.

Concerning wit also we have a new theory to propose. It has been shown elsewhere¹ that shock tends directly to neuro-psychic disintegration, and that dread of it is one of the chief motives that have made science and prevision. The shock diseases and lesions break up coherence in brains of great plasticity or convulsibility. Now, wit is of the nature of shock, reduced to almost its faintest terms, and is related to it somewhat, as the tickle sensations of minimal contact are related to the more definite forms of touch, or to dermal blows and lesions. Two factors are necessary—suddenness and a light touch.

Let us take a few very random instances from our returns. A young lady asks in a book store for "The Eloping Angels," and is told by the clerk that they only have its sequel, entitled

¹ See "A Study of Fears," by G. Stanley Hall, AMERICAN JOURNAL OF PSYCHOLOGY, Vol. VIII, No. 2; X, "Shock," p. 193 *et. seq.*

"The Heavenly Twins." The protensive wish is disappointed, but instead of an utterly irrelevant substitute, a very unexpected relation is presented, with a light suggestion of the forbidden or delicate. A child says champagne "tastes like your foot asleep." Here again the titillation of a minimal shock or constant element is manifest, but the pleasure is here heightened by both the naïveté of the child and the aptness of the comparison. When Charles Lamb saw the sign, "Beware the dog," and asked, "Ware be the dog?" we have in addition to the unexpected inversion a natural sequence of thought.

Culture and practice consist largely in inhibiting irrelevant reactions. By anticipatory suppression of these, the attention foresees its way and economizes energy. Wit, however, because it touches the soul in an unexpected zone, evokes a clotted mass of reflex movement of mind, perhaps not unlike a first experience before the will had repressed needless reactions. The intermittence of inhibition for the mental area thus unexpectedly invaded is thus analogous to partial psychic decapitation.

If this view is correct it helps us to understand why jolly people are often shallow, and why men of intense concentration, earnestness, and dogmatists generally, are so slow to see jokes. Wide irradiations and deep, ratty tracts of association are inversely as each other. What Professor Boyesen calls the plague of jocularity in this country, which is manifested in the waggish propensity to lug in funny stories, no matter how irrelevant, and not only in after-dinner speeches, but on serious occasions, is not an altogether good sign. Of a group of foreign authors to whom Mark Twain's story of the "Jumping Frog" was told, not one thought it humorous, but either pitied the poor frog or condemned the fraud or the idleness of the pastime. Excessive mental ticklishness is probably to be set down as one of the neurotic stigmata, and a tickle club, described by one of our reporters, has its slightly morbid analogue in many a coterie of punsters and drolls. If northern races are prone to sadness, gloom, moroseness and tragedy, and the people of the sunny south are merry makers; if London is sober and Naples is quivering with rollicking fun, and resounding with laughter; if youthful nations enter the stage of history with jollity and games, as in the brightness of the morning and spring, while nations at the top of their career are graver and more sedate, —this distinction, we believe, marks the radically different psychic diathesis which separates the careless, happy enjoyment of life and the passion for novelty on the one hand from virile energy, perseverance and achievement on the other.

This view, too, helps us to understand the revulsion from old jokes. Children despise those who make effort to be funny, and especially those who endeavor to provoke a laugh by inadequate or familiar means. The "chestnut" starts irradiation over an old tract, but either inhibition checks the laugh or the energy of the unused centres has been consumed, and the effects of an anti-climax are manifest. I sat down one afternoon to read a careful and judicious collection of facetiæ of all kinds which a colleague at Clark University had collected and had kindly loaned me. Most of the new ones in the first dozen or two were irresistible, and at not a few I laughed aloud alone in my study, but at the end of the first twenty or thirty minutes the quality of the collection seemed to have greatly declined and so lost its interest that I turned to other things. For several consecutive days, as I read on in his collection, this process was repeated till I learned that my fatigue curve for wit fell soon and steeply because unused tracts, although they discharged very easily, soon consumed their energy and were left temporarily in the condition of exhaustion until recuperated next day, only to be again deflowered and decrepitated. In this condition, solicitation to the act of convulsive laughter, especially if persisted in, may even provoke anger analogous to the irritability of fatigue.

As in tickling, again we have here, too, enormous fluctuations of excitability dependent upon the general condition of health, rest, mood, etc. Our feeling toward the personality of the provoker of wit is a very dominant factor. What in one person seems silly and even banal, in another is very laughable. We love to laugh for our friends, but consider it humiliating to give our enemy this power over us. Friendship and love sensitize all our risibilities as they do so many functions, and we delight in having those we care for discharge our powers of laughter just as animals love to be scratched by those of whom they have no fear. This power, too, makes for good will on the part of the hearer, but we steel ourselves with all possible energy against the assaults of those who are antipathetic. Laughter at wit implies compliment, and one of the earliest signs of love is sometimes the disposition to laugh at even the puerilities of the object of affection.

Cheap, superficial and even false connections between the discrepant parts of this complex and heterogeneous universe give pleasure because the long quest for unity of which monism, monotheism and science generally are the outcrops, has been so intense that even the flitting gleam of an extension of it into new realms gives pleasure like cloud land-

scapes at sea. The discontinuities of the cosmos seem less because irrelevant ideas salute as they pass. Some *jeux d'esprit* anticipate what later becomes settled truth, as a rude darning stitch by a child may determine how textures are to be quilted and embroidered together. Wit belongs to the penumbral, nebulous regions of intellect, and madness confuses the outlines and loses the proper perspective of the two. Hence, also, imagination may give the keenest pleasure because it opens the realm of the possible, which is always larger and better than the real in a world where the best things have not happened yet.

Must we not, then, assume that just as there are rudimentary functions that are slowly decaying, so there are nascent organs of soul, and perhaps body, the maturity of which lies far in the future? Man is not the larva of an angel, but of a higher superman that is to be. The imagination is the field to which we should look for the first expressions of a higher potentialization of the human race; because men dream visions they are prophets of a future of realization, where hope may attain some of its fruitions. In wit and fancy, present man is practicing for the higher man that is to be, just as some of children's games are preparatory to the duties and realities of adult life. We must not deem the pleasures of imagination, therefore, or the wider range of possibilities opened by wit, both of which so enrich the hard, stern world of present fact, as entirely without symbolic value as prophecy. These bid us hope.

IX. *Laughter at what is forbidden or secret.* There are certain things necessary and essential to human life which society has stamped as improper or indecent, and certain parts of the body which it has agreed to conceal. Covert allusions to immodest things are sometimes a humoristic specialty. Things, acts, gestures, smells, hinted exposures that ever so remotely suggest these things, are a prominent cause of laughter with young children, and *double entendre*, *risqué* phrases, tales or innuendos, obscenities expressed in innocent looking tropes or by ingenious euphemisms, have long made the chief source of laughter of simply vulgar people and roudés, as is well shown in the voluminous new dictionary of such terms in French and English, just published, with many thousand of apt but unreadable quotations by an amazingly learned pseudonymous author.

It is hard to find all the causes of modesty and shame, but it is certain that very much of what is best in religion, art and life owes its charm to the progressively widening irradiation of sexual feeling. Perhaps the reluctance of the female first long-circuited the exquisite sensations connected

with sexual organs and acts to the antics of animal and human courtship, while restraint had the physiological function of developing the colors, plumes, excessive activity and exuberant life of the pairing season. To keep certain parts of the body covered irradiated the sense of beauty to eyes, hair, face, complexion, dress, form, etc., while many savage dancers, costumes and postures are irradiations of the sexual act. Thus reticence, concealment and restraint are among the prime conditions of religion and human culture. When the force of these restraints begins to be felt, the even hinted rupture of them relieves tension and suggests reversion to the long state of naked nature before shame took its rise. Like so many of the causes of laughter, this is thus in part reversionary, and involves atavistic reminiscences of the old Bacchanalian, bestial paradise of license and abandonment. Here, too, as these instincts grow in strength at adolescence, restraints normally grow with them, and the domain of concealment extends to an increasing number of social forms and customs. It is amazing and almost overwhelming to realize how wide is the field of possible obscene allusions, and how a low but clever mind can give a turn of sexual reference to almost any expression or act, and how loud and long the laugh of coarser natures, and what an immense viability seems attached to obscene jokes and innuendos. Some jokers see vileness in everything, as extreme phallic theorists see sex in all historic monuments and forms. This source of wit and humor, however, is most demoralizing because it breaks through restraints on the stability of which civilization depends. Perhaps nowhere in psychic life is the tension greater than between these instincts and their reductives, so that the very suggestion of sudden freedom from the latter unhalts the strongest instincts in the animal kingdom of mind. This reversionary cause of laughter, which has not been hitherto recognized, we deem, as will later appear, one of our most important contributions to the subject.

Closely akin to the above is laughter at religious sanctities. The gods, priests, conceptions of post-mortem life, of retribution and reward, religious services, ceremonials and doctrine, Bibles, etc., have restrained and kept men in awe, and hedged life about with things that were forbidden; placed their taboo not only upon injurious, but also upon harmless acts. There have been periods in history when the soul asserted itself and threw off or broke through these cults, and then satire and ridicule have been most effective. Individual minds, both of low and high order, have denied and broken through these restrictions and laughed the gods and all the

paraphernalia of their religion to scorn in the effort now to assert man's pristine state of license, and now to make way for a larger and more adequate formulation of their religious instincts. A great proportion of the less boisterous laughter of the world has been at sallies against these sanctities, but toned down because their dominion over the spirit is so hard to break. In both cases, however, the assertion of freedom and liberty causes the joy.

X. *Laughter at the Naïve and Unconscious.* Helmholtz' theory of art teaches us that one element of æsthetic pleasure is in contemplating what is naïve and unsophisticated in self-consciousness, and getting a glimpse of human nature when it is stripped of all the disguises which convention and custom have constructed over it. Our returns are very copious under this caption. The innocent blunders of children concerning the meaning of words which are similar in sound or spelling, their fresh and literal interpretation of religious teaching about God, heaven, death, the soul; their clever interpretations of the real as contrasted with the conventional motives of human conduct; their explanations of natural phenomena; their animism; their ascription of human traits to animals; their imitations, curious questions and charming innocence, and spontaneity generally;—all these predispose adults to laughter, and often provoke it. Our interpretation of these data, too copious to quote, would supplement without in any way discrediting or restricting that of Helmholtz, as follows: We would postulate a strong and deep instinctive desire to know human nature, to understand motives, instincts, real springs of action. In childhood all these processes are more accessible to observation than in adults. We meet fundamental more than accessory traits, so that in childhood and genius, in addition to feeling that human nature is rich, true and sound to the core, as the syllabub of adult consciousness is not, we also gratify a unique psychological impulse which is deeply implanted in our nature. How deep and strong it is appears not only in the pleasure in childish ways, but in things so diverse as love of pets and in that vast body of gossip which consists in the analysis of character, deeds and motives. Here we study man as he comes fresh from the hands of nature. The bullion is all unminted and without hall mark, and great as is the charm of nature where she is yet unsubdued by man and pours forth her energies with such exuberance and abandon, the charm of naïve human nature is yet greater, and its study is one of the strongest of all intellectual and social passions. That this primordial motive to child study has only just come to full consciousness and is but now

slowly developing a scientific method, is because of its vast complexity. It only develops and strengthens, but by no means supersedes the maternal love with which child study began.

XI. *Animal Laughter.* Both the children and adults who have answered our questionnaire have expressed the almost unanimous opinion that animals laugh, and most support their view by specific cases. All dogs laugh with their tail, although this intermittent movement is as different from the ha, ha of a man as is a dog's soul from his. A gentle wag is the dog's smile, but in extreme pleasure some dogs wag the whole body in a way that suggests a laugh of convulsive violence. So many children rock sideways as well as back and forth, or wag the head, a gesture which has always been suggestive of ridicule. Children think dogs smile with their eyes, and describe how they brighten or partly close in a peculiar way when they are pleased or sportive. It is an almost unanimous verdict, too, that the dog draws back the corners of his mouth if tickled in the ribs, and thus literally and physiologically smiles. They have "funny streaks" and run around in a circle, sometimes showing their teeth in a peculiar way, perhaps lifting the upper lip when they play with children they know, but never with strangers.¹ This is seen when dogs and cats play together.² Many dogs have a short bark that is peculiar to a pleased state; this children variously interpret eh, eh, ha, ha, etc.; others are taught to show their teeth and make facial grimaces when told to laugh. Dogs are said to open their mouths at play when they are not at all heated, but to laugh one in the face. Some do so if children blow in their faces, others watch the dog's under lip and think it drops with pleasure. Many details of play with dogs are given which show how firmly children believe dogs have a sense of humor and perpetrate practical jokes.

A few children think that purring is the cat's laugh, and others describe pleased expressions in the eye, and still others a peculiar noise. Some open the mouth when pleased, and the happy expression of their faces is mentioned, and some think cats laugh by rubbing against people, licking their hands, etc. Horses are said to jump, snort, paw, roll, etc., to express pleasure. They run, stamp, squeal, kick, stop suddenly, whinny, snort, lift their tails, shake their heads, bite trees, posts, run almost near enough to be

¹ "*Anthropologische Vorträge*," Heft I, Braunschweig, 1876, p. 43 *et. seq.*

² "*Mimik und Physiognomik*," Detmold, II Auflage, 1886.

caught and then are off, play practical jokes on each other, prance, champ and shake the bit, etc. Children often describe pleased expressions in the eye, grinning to show teeth, and "a snicker." Menault, in his "Wonders of Animal Instinct," English translation, p. 273, says there are five sorts of neighing noticeable in horses. First, that of *joyfulness*, in which the sounds get stronger and sharper: the animal bounds and rears, but has no intention of doing any harm. Second, that of *desire*: in this the accents are prolonged and deep. Third, that of *anger*: this note is short and sharp; the animal tries to kick, to strike with his front feet, and if he is vicious to bite. Fourth, that of *fear*: grave and hoarse, seeming to come only from the nostrils, and like that of anger it is very short. Fifth, the neigh of *sorrow*: it is a groan, a kind of suffocated cough, in which the grave sounds follow each breath.

Perhaps what has hitherto been called the singing of birds may be called their laughter. They have always been thought very joyous creatures. The crowing of roosters the children think an expression of pure joy. In building their nests sparrows make a peculiar chatter of pleasure. Hens have a cackle, and many birds a peculiar chirp, cluck or coo, in spring in feeding. In their courting antics notes, made at no other time, suggest joy. They dance, flap their wings, and overflow with joyous notes when their cages are hung in the sun, in the morning when they are fed. The cackle of hens after laying eggs some children interpret as laughter.

Hudson explains the cackling of hens by the habit of their wild progenitors of laying their eggs and then flying for a hundred yards or so from their nest. Their cackle at that distance from the nest misleads its enemies and preserves its descendants. Its "joy" is therefore rather of the nature of an alarm note. So useless nowadays in the domesticated hen!

Calves, especially when first let out in the spring, gambol and bleat, as sometimes do frisking lambs. Monkeys grin, chatter, play jokes, etc. Children detect smiles on the faces of bears, elephants, and even wolves, tigers and other menagerie animals when they are pleased, and all agree that animals have their fun and a keen sense of humor, and are fond of jokes and have their own modes of laughter.

Children are by no means scientific observers, but intense anthropomorphizers, so that the verdict of all the children in the world upon this point would be utterly inconclusive. They are joyous and happy, and see pleasure in all that lives and moves around them. On the other hand they, like savages,

live in closer relations to the animal world than civilized adults. Their souls are less differentiated and more in rapport with the brute consciousness ; so that, on the whole, their opinion is interesting and not without some value.

Again, the facial muscles and also the organs of vocal expressions are, of course, very far less developed in animals than in men ; hence we should expect that manifestations of pleasure and pain would be more diffused over the larger muscles and the entire body, and be gradually focused in the face and voice, only late and high in the scale of being. Bearing this in mind, and remembering the law of kinetic equivalents, we must believe that there is a fundamental sense in which animals laugh, and that their dances, grimaces, noises, play, express the same erethism, euphoria, *Freude an Können, und Ursache-sein*, or whatever other theoretical cause we may assign to laughter. They are certainly ticklish, love to parody disobedience, play, fight, and are sometimes almost mad with manifestations of joy.

XII. *Miscellaneous.* We cannot doubt the fact of spontaneous laughter of children from the large body of returns on this subject. Infants smile on awakening in the morning before their eyes are opened, when or after they are being fed, etc. There are many cases of spontaneous laughter in older people when alone, and even when their thoughts are not bent upon anything peculiarly witty or especially pleasant. Other children laugh aloud when they are alone because they are glad the world is so beautiful, or that they are alive, are not deformed, are not animals ; in the morning they have been so happy that they must laugh, and perhaps elaborately seek excuse or explanation ; when they are through a task, realize their parents' love, or how protected they are against cold, or by night that their bed is so soft. On a beautiful spring morning they sit down and laugh alone, or laugh at every kind of stimulus or event, at blossoms, birds, beautiful clouds. Some mothers and kindergartners have a little game of laugh because they rejoice in life and to teach gratitude to God, making it thus a form of devotion or prayer. Laughter at the thought of present blessings, future and past pleasures, at the sunshine on the waves, at seeing children or animals play, or sometimes because they are so good, or again from no assignable cause, as the birds sing, may occur in a way that almost suggests the overflow of superfluous energy from centres discharged with no other stimulus than that of exuberant anabolism.

Old people's sense of humor is often said to resemble that of children ; their hearty laughs at nursery rhymes, at stories of their younger days, quaint vernacular idioms, their fond-

ness often for Bible jokes, their general lack of interest in current comicalities, papers, etc., and particularly their long drawn out details, their incessant repetition of old stories not only from year to year, but often reiterating the humorous nucleus of a tale over and over, their often unpleasant movements, expressions and noises, and their propensity to laugh at their own jests and smaller things as age advances, are all dwelt upon. Some of these traits are so characteristic that Herodotus says : The ancient Scythians always ate their old people when they began to tell old stories.

Insanity always readjusts the balance between pleasure and pain, and thus either increases or decreases laughter. This we believe to be an important generalization, and one that holds with rare exception. It is not true, however, that expansive and exalted states which widen the pleasure field always increase laughter, because often they are associated with a sense of greatness and dignity which are inconsistent with it. In settled melancholia laughter is forever extinguished and impossible. In progressive paralysis it is rare, but always profoundly modified from the normal. In hysteria and neurasthenia it is often excessive and alternates with tears, while in some forms of mental decay the psyche loses its sensitiveness for extremes of both pleasure and pain.

XIII. *Notes on Literature.* The many theories since Aristotle concerning laughter, wit and humor, hitherto published, have been lamentably metaphysical in their tendency, or have been exceedingly circumscribed in the range of their induction. Nebulous and narrow, they have furnished no firm foothold for further research. Hobbes ("Human Nature," Chap. IX, Section 13) sums up his view as follows: "I may, therefore, conclude that the passion of laughter is nothing else but *sudden glory* arising from some sudden *conception* of some eminency in ourselves, by *comparison* with the *inferiority* of others, or with our own formerly." Dryden defined wit as a "propriety of thoughts and words, or thoughts and words elegantly adapted to the subject." If true, the facts of Ganot's physics would be jests of most excellent pungency. Pope borrows from Dryden :

True wit is nature to advantage drest,
Oft thought before, but ne'er so well exprest.

Dr. Johnson : "Wit may be more rigorously and philosophically considered as a kind of *concordia discors*, a combination of dissimilar images or discovery of occult resemblances in things apparently unlike." The discovery that hydrogen and oxygen produce water, that potassium thrown

in water produces flame, would thus be strokes of pleasantry. Sir Richard Blackstone: "Wit is a series of high and exalted ferments." Locke describes wit as "lying mostly in the assemblage of ideas, and putting those together with quickness and variety, wherein can be found any resemblance or congruity, whereby to make up pleasant pictures and agreeable visions in the fancy." Addison adds to this definition that delight and surprise are necessary to make wit, and illustrates it thus: When a lover tells us that the bosom of his mistress is as white as snow, the simile is not witty, but it becomes so when he adds that it is also as cold. Dr. Campbell in his "Philosophy of Rhetoric" defines wit as "that which excites agreeable surprises in the mind by a strange assemblage of related images presented to it." Kant (in his "Critique of Judgment," Section 54, Barnard's translation) finds in incongruity and absurdity the basis of the comic. "Laughter is an affection arising from the sudden transformation of a strained expectation into nothing." The pleasure of the ludicrous results not from the mental appreciation of the circumstances in question, but from the life-giving qualities of the laughter; "the lungs expel the air at rapidly succeeding intervals, and thus bring about a movement beneficial to health: which alone, and not what precedes it in the mind, is the proper cause of gratification in a thought that represents nothing."

Hecker (*"Die Physiologie und Psychologie des Lachens und des Komischen,"* Berlin, 1873, p. 15) affirms that laughter is a consequence advantageous to the organism. He holds that in tickling, and also in laughing at a joke, the physiological accompaniment is an intermittent pressure upon the brain through an intermittent contraction of the minute blood-vessels therein, laughter realizing this by causing their congestion. Hecker supposes that in tickling there is a stimulus upon the vaso-motor nerves, causing an anæmia of the brain. The intermittent expirations which constitute laughter have the purpose of counteracting this anæmia. He holds that the essence of comedy is an intermittent stimulus of the sympathetic nervous system, and that there is a rapid oscillation between pleasure and pain analogous to the phenomena of rivalry in the field of vision of the two eyes. Pleasure is passing over into pain and pain is passing over into pleasure (pp. 76-83). This is his explanation of wit due to ambiguity of meaning. His elaborate analyses are not adequate to the present state of knowledge.

The Rev. H. R. Haweis, taking a metaphor from meteorology, calls humor the electrical atmosphere and wit the flash. Thackeray describes humor as love and wit.

Vasey, in his "Philosophy of Laughter and Smiling," 1871, attempts no explanation of laughter, but thinks it very doubtful whether children would ever learn to laugh if they were not physically tickled, especially in a forbidden place, and deems excessive laughter almost morbidly convulsive. Man, he says, is not a laughing animal, and the habit is by no means universal, many savages being too stoical to laugh at all, agreeing with Chesterfield that a true gentleman may smile, but never laugh, habitual laughter being always a mark of shallowness, ignorance and vulgarity. We laugh at, but never respect the wit. Heraclitus, who wept at the follies of man, was wiser than Democritus, who laughed at them. Joke books are pathetic and so are the gags of low comedy. Man abdicates will and mind and distorts his features and becomes contemptible in paroxysmal laughter. Jesus never laughed; sorrow is better. The London Fun Club, with its low, practical jokes, suggests how desperate and intoxicated man may become under the influence of the pathetic desire to be funny. Schopenhauer (*Welt als Wille*, I, Sec. 13) says: Laughter never arises from anything else than the suddenly recognized incongruity between the conception and the real object that in some respect or other has been thought through it, and it is itself simply the expression of this incongruity. The greater and more unexpected in the apprehension of the laughter this incongruity is, the more violent will be his laughter. Herbert Spencer ("Physiology of Laughter," p. 206) would trace laughter through its successive causes, up to a distension of the cerebral blood-vessels. "Laughter naturally results only when consciousness is unawares transferred from great things to small—only when there is what we call a *descending* incongruity." The insufficiency of this theory is manifest indeed from the facts of the foregoing paper. Bain ("Emotions and Will," Chap. XIV, Sec. 39) finds that "the occasion of the ludicrous is the degradation of some person or interest possessing dignity in circumstances that excite no other strong emotion." Fleet ("A Theory of Wit and Humor," 1890) presents an "imperfection" theory which has some affinities to Spencer's "descending incongruity" theory. He attempts to describe in detail a number of "risible phases" which have some merit.

J. L. Ford ("Concerning Humor," in *The Bachelor of Arts*, Jan., 1896) claims that about nine-tenths of the humor of the stage or literature is nothing more or less than a sense of one's own superiority. The other tenth, "which is the most important part of the whole, as it comprises the finer and more advanced forms of wit and humor," he says he cannot

satisfactorily account for. "Careful study of the work turned out by these professional joke-makers reveals the fact that fully nine-tenths of their humor is founded on the simple idea of disaster or misfortune," p. 176. "Nearly all primitive humor is founded on this simple idea. In the English pantomime, in which many of the most ancient forms of jest are so firmly imbedded that they are in as fine a condition to-day as they were under the reign of the Merrie Monarch, all the fun depends upon the indignities heaped upon the different characters," p. 176. "For a great many years nearly all our national humor had for its foundations the mother-in-law, the goat, the stovepipe, inebriety, and the banana peel." B. I. Gilman ("Pain and Pleasure," this JOURNAL, VI, No. 1, p. 43) thinks "the perception of the ludicrous is not complete when the incongruity . . . has been discovered, nor does the pleasure of the comic proceed from its recognition. The completed perception of the ludicrous involves a sequence of a satisfaction upon a disappointment, and the pleasure of it is the intrinsic pleasure of the one sharpened by the excitement of the other." W. S. Lilly ("The Theory of the Ludicrous," *Fortnightly Review*, May, 1896) attempts a somewhat belated Kantian explanation. "The ludicrous is an irrational negation which arouses in the mind a rational affirmation." See also his "Four English Humorists of the Nineteenth Century," 1895. "The humorist, we may say, is an artist who playfully gives us his intuition of the world and human life." For short sketches of German theories the reader may be referred to those given by Dr. Ewald Hecker (*op. cit.*) or to Dr. Joseph Müller's "*Das Wesen des Humors*" (1896). For some French theories one may read Camille Mélinand, "*Pourquoi rit-on? Etude sur la cause psychologique du rire*," *Revue des Deux Mondes*, 1895, pp. 612-630, or M. Philbert, "*Le Rire*," 1883. Mélinand's article is excellent in its criticism. A. H. Keane (*Ethnology*, 1896, pp. VIII and 195) lays stress on the fact that "the facial organs of speech are non-existent in the anthropoids, rudely developed in fossil man, and perfected only in the later ages." Sully, Grant Allen, Wallaschek and others have in the main followed Spencer, whose view was in a general way anticipated by Jean Paul, Schiller, Beneke and others, but is now met by an almost opposite theory in the recent work of Karl Groos ("*Die Spiele der Thiere*," Jena, 1896), who deems play not so much an overflow from unused centers or organs as practice for future activities. (*Vide infra.*) See, also, Dr. Louis Robinson's article on Ticklishness in the Dictionary of Psychological Medicine, and compare it with that of Sir B. W. Richardson in the same work on the Psychology of

Tears. See also Höffding's Psychology (Part VI, p. 290, English translation), also Piderit's "*Mimik und Physiognomik*." These latter views in general go beyond Darwin's "Expression of Emotion." Sir J. Russell Reynolds (*Lancet*, Jan. 5, 1895) has made a suggestive study, entitled "The Types of Students," in which he analyzes with a master hand the characters of five cases, whom he designates as Cyrus Vane Velox, David Superficialis Hurry, and the brothers Orbicularis and Longitudinalis Goodman. C. A. Witchell ("Evolution of Bird Song," 1896) accepts Darwin's view of the origin of voice, and traces all bird song to reiterated but identical notes of calling and warning in a way that is suggestive for views like those of Schiff and Hecker on the intermittent cause of laughter, and suggests an identical origin of all animal expressions of pleasure and pain. (*Vide infra*.) Play has thus a biological justification. Groos lays great stress upon the fact that the plays of animals are also the manifestations (*Ausübungen*) of the various instincts of their individual group. They are prophetic in the true sense both of the past and of the future. Groos' work is the best issued on this subject in recent years.

In answer to the request for that which had excited greatest laughter, the diversity was great. The following literary productions were specified in order of frequency: Artemus Ward, Peck's Bad Boy, Brownies, Huckleberry Finn, Topsy, Sam Weller, Chimmy Fadden, Pickwick, Ichabod Crane, Mary Wilkin's characters, Rip Van Winkle, Manley's Ghost, Barkis, and scores of others less frequently. Children specified stereopticon pictures of mice running into a sleeping man's mouth, a woman whipping her husband, Punch and Judy, a jug of water over the door to be emptied on the person opening it, parodies of familiar standard poems, tossing in a blanket, a goose in the teacher's chair, simple people, negro and other eccentricities, animals performing human acts, college boys playing cards, and all kneeling to pray when the professor rapped, and an almost interminable list of banalities, practical jokes, puns, conundrums, blunders, etc. All this suggests that the repertory of the modern merry maker is very large, and that we are very far from having rubrics adequate to explain the vast variety of laugh-provoking specialties.

We are persuaded that all current theories are utterly inadequate and speculative, and that there are few more promising fields for psychological research. What we next need is to apply all the resources of instantaneous photography to collect laughs and smiles in all their stages in men and women, children and adults. These are so evanescent that

the collection we have begun shows differences from the traditional representations in art as marked as those found in the gait of the horse. Secondly, the resources of the phonograph should be applied to the vocal utterances of laughter. Thirdly, a still wider collection of returns to syllabi such as ours is needed. Fourthly, a very careful collection of thousands of the very best ancient and modern jests, on cards such as has been begun for ready sorting, until genera and species for some classification on a purely inductive basis shall appear. Fifthly, a very exhaustive review of humorous literature, proverbs, etc., with analytic intent. We must go back of speculation to rebase our theories upon very wide empirical data, as Aristotle is said to have derived his categories from an immense induction from all the topics of conversation in the streets and market. Nothing is plainer than that the old definition, such as "descending incongruity," a sense of superiority, "surprise," the Lange-James theory, Hecker's "contrast and intermittence" theory, the "unusual combination" views, L. Hill's "vaso-motor hub" interpretation, etc., are either utterly mistaken and misleading or entirely inadequate to the subtleties of nature, or mere literary descriptions of partial aspects of the subject. Hardly less so and merely verbal are the many definitions of wit, humor, satire, drollness, buffoonery, fun, comedy, joke, quaintness, the ridiculous, the pun, irony, banter, clownishness, caricature and mirth, found in the rhetorics and treatises on æsthetics, although these suggest a broader basis than do the philosophical theories.

Certain, it seems, although this paper is so preliminary and tentative, that hearty laughing is a good thing for children, and might be listed among their inalienable rights. Mad, wild, weird and almost barbaric though laughter sometimes seems, perhaps, reversionary and dissolutive in its nature, often convulsive in its intensity, on the whole, no doubt, like occasional crying for babies, it is good for the voice, lungs, diaphragm and digestion, produces needed increase of blood pressure to irrigate new forming tissues, develops arterial tonicity and elasticity, tends to range, flexibility and vigor of emotional life, gives an optimistic trend against its evils, and tones down into settled and less paroxysmal states and grades of pleasure as maturity advances. While we cannot agree with Hughlings Jackson's conception of fear as broken down anger, it is possible that æsthetic pleasures generally, genetically considered, and even some of the joys of religion and virtue, are laughter diffused, tempered properly alloyed with pain, and minted for general circulation through all our psychic activities.